

What is claimed is:

1. A double-disk polishing machine, particularly for tooling semiconductor wafers, comprising a machine housing, an upper and a lower working disk, carrier disks for the lower and upper working disks either of which is connected to a vertical driving shaft which, in turn, are rotatably supported in the machine housing by means of roller bearings and are adapted to be driven by a motor via a gear mechanism wherein cooling channels to which a coolant is fed are formed in each carrier disk, characterized in that each of the carrier disks (14, 164) is mounted with the aid of fastening means on a circumferential ring (24, 190) of a wheel-shaped basic carrier (18, 166, 166a) which, in turn, is connected to the driving shaft (36, 170, 170a), the radius on which said fastening means lie which connect said basic carrier to said carrier disk is approximately on half the width of the ring-shaped working disk (10, 162) and said basic carrier for the upper working disk (162) is connected to the shaft (170, 170a) or to carrier disk (164) in such a way that the inclination of the upper working disk (162) automatically adapts itself to that of the lower working disk (162) when the two working disks (10, 162) bear under a pressure against the interposed workpieces.

2. The polishing machine according to claim 1, characterized in that the shaft (170) of the upper working disk (162) is coupled to the basic carrier (166) via a spherical bearing the bearing elements of which (172, 174) are in an engagement transmitting a torque via curved intermeshing teeth.

3. The polishing machine according to claim 1, characterized in that the ring (190) of the basic carrier (166a) is connected to said carrier disk via several piston cylinder units (192) disposed at a circumferential spacing wherein the piston rod spaces of the units, on one hand, and the no-piston rod spaces, on the other, are filled with a hydraulic medium and are in communication with each other.

4. The polishing machine according to claim 1, characterized in that the circumferential ring (24, 190) is connected to the boss (20, 168, 168a) via radial spokes (22).

5. The polishing machine according to any of claims 1 to 4, characterized in that the fastening means (24, 150) between the basic carrier (18) and the carrier disk (14) allow a relative radial motion between the elements.

6. The polishing machine according to claim 1, characterized in that the shaft (36) for the lower working disk has at least one axially parallel channel (46, 76) to which a coolant is fed by means of a stationary feeding device (48, 52).

7. The polishing machine according to claim 6, characterized in that the feeding device (48) is disposed in the lower region of the driving shaft (36) and the upper end of the cooling channel (46) is connected to the upper cooling channels (16) in the carrier disk (14) via channel portions (62, 64, 70, 68).

8. The polishing machine according to claim 7, characterized in that another axially parallel channel (76) in the driving shaft (36) is connected, at the upper end, to the upper cooling channels (16) in the carrier disk (14) via channel portions (74) and that the lower end region of the other cooling channel (76) is connected to a discharge port.

9. The polishing machine according to claim 6, characterized in that the lower cooling channels (30) are also connected to a cooling channel in the driving shaft (36).

10. The polishing machine according to claim 1, characterized in that the driving shaft (36) of the lower working disk (10) is supported, by means of two spaced-apart tapered roller bearings (44), by a gearbox casing (38) containing a gear mechanism wherein the inclination of the roller bearings (44) is directed opposite to each other.

11. The polishing machine according to claim 1, characterized in that the driving shaft (36) of the lower working disk (10) has a spur gear (82), which intermeshes with a driving pinion (84) of the motor (86), and that the spur gear (82) and the pinion (84) have straight intermeshing teeth.

12. The polishing machine according to any of claims 1 to 11, characterized in that the machine housing (50) has mounting means (110, 130, 126, 124) on diametrically opposed sides of the lower working disk (10) to mount a bridge-like turn-off device (114) which, in a bridge-like guide (116), carries a carriage (132) holding a turn-off tool (134) which is radially moved with respect to the working disk (10) by a linear drive (136).

13. The polishing machine according to claim 12, characterized in that said mounting means have an approximately horizontal contact area (112) on one side and sustaining means (124, 126) adjustable in height on the opposed side, which are adapted to be mounted in a supporting portion (130) of the machine housing (50).